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UNITED STATES PATENT OFFICE

THE CLASSIFICATION OF PATENTS

(2d Revision)



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UNITED STATES PATENT OFFICE

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(2d Revision)



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CONTENTS

Section	Subject	Page
1.	Introduction.....	1
2.	Past classifications of the U. S. Patent Office.....	1
3.	Beginning of revision.....	3
4.	Precedents and authorities.....	3
5.	Definition of scientific classification.....	4
6.	Principles of the new classification of the Patent Office.....	4
7.	Elements of a Patent Office classification.....	5
8.	Basis of classification.....	5
9.	Art as a basis.....	6
10.	Function or effect as a basis.....	8
11.	Structure as a basis.....	10
12.	Division and arrangement.....	10
13.	Infinitude of possible combinations.....	11
14.	Division and arrangement in the natural sciences.....	12
15.	Permutations and combinations of useful arts contrasted.....	12
16.	Difficulty of entitling a subclass corresponding to every combination.....	13
17.	Expedients to reduce the number of subdivisions.....	14
18.	Superiority and inferiority.....	16
19.	Definite positional relationship of subdivisions.....	17
20.	Meanings of genus and species.....	18
21.	Indented schedules.....	19
22.	Bifurcate division.....	20
23.	Utility of arrangement.....	20
24.	Definition.....	22
25.	Cross-references and search-notes.....	22
26.	Diagnosis to determine classification.....	24
27.	Claimed or unclaimed disclosure.....	24
28.	Diagnosis of pending applications.....	25
29.	Difficulties due to varying ideas of claims.....	27
30.	Rules of classification.....	28
31.	Basis of classification.....	29
	31-1. "Art" as the basis.....	28
	31-2. Operative or manipulative arts.....	28
	31-3. Structures.....	28
	31-4. Composition of matter and formed stock.....	29
32.	Division and arrangement.....	29
	32-5. Exhaustive division; miscellaneous subclass.....	29
	32-6. Combinations to precede subcombinations.....	29
	32-7. Diverse modes of combining similar parts.....	30
	32-8. Important characteristics to precede less important.....	30
	32-9. Relative position of subclasses.....	30
	32-10. Indentation of subclasses.....	32
	32-11. Different kinds of titles for subclasses.....	33
	32-12. Arrangement to limit search and cross-references.....	33

Section	Page
Rules of classification—(Continued)	
33. Definition.....	34
33-13. Tentative definition.....	34
33-14. How to define.....	34
33-15. Explanatory notes used to supplement definition.....	35
34. Cross-references and search-notes.....	35
34-16. Impossibility of cross-referencing all disclosures.....	35
34-17. Occasion and direction of cross-referencing.....	35
34-18. Occasion and scope of search-notes.....	36
35. Diagnosis to determine classification.....	36
35-19. Patents diagnosed by claimed disclosure.....	36
35-20. Patents diagnosed by most intensive claim.....	37
35-21. Exception to rule 19, claim for a part of a disclosed combination.....	37
35-22. Exception to rule 19, claims for a part of a disclosed combination.....	38
35-23. Exception to rule 19, broad combination (old as matter of common knowledge) with specific element.....	38
35-24. Exception to rule 19, article of manufacture defined only by material.....	39
35-25. Exception to rule 19, process of utilizing a composition..	39
35-26. Processes and machines for their practice.....	39
35-27. Patents having claims for several different inventions...	40
35-28. General rule of superiority between statutory kinds of invention.....	40

PREFATORY NOTE

Principles to be followed in classifying U. S. Patents have been stated in two U. S. Patent Office publications, published by the U. S. Government Printing Office, the first "Plan of Classification of Patented Inventions," 1900, and the second "The Classification of Patents," 1915, which was reprinted without change of text in 1917.

Experience gained in the application of the first plan showed it to be incomplete and some of the plan to be improper. The departures from the first plan were incorporated in the second plan published in 1915.

Many classes have been made since 1898, some under the first and some under the second plan, some contrary to either plan due to improper understanding thereof, and some deviating from both plans, deliberately due to conceived or demonstrated superiority of such deviations.

The classes made subsequent to the adoption of the first plan are the classes having definitions.

Relative to defined classes, the classification in fact made, as shown by the definitions, notes to other classes, lines stated with other classes and the actual locus of art, supercedes the principles of classification and must be followed.

Relative to undefined classes, the actual locus of the art is the only criterion, except for notes in defined classes that refer to undefined classes and state the line established therebetween.

The present revision follows the text of the 1915 plan, except for those portions that experience since its publication indicates should be revised, and which departures have been demonstrated in practice to be preferable.

Criticisms of the plan herein stated and suggestions as to its improvement are invited.

THE CLASSIFICATION OF PATENTS

1. INTRODUCTION

Classification lies at the foundation of the mental processes. Without the power of perceiving, recognizing resemblances, distinguishing differences in things, phenomena and notions, grouping them mentally according to those resemblances and differences, judgment is impossible, nor could reason be exercised in proceeding from the known to the unknown.

* * * * *

The facilitation and abbreviation of mental labor is at the bottom of all mental progress. The reasoning faculties of Newton were not different in qualitative character from those of a ploughman; the difference lay in the extent to which they were exerted and the number of facts which could be treated. Every thinking being generalizes more or less, but it is the depth and extent of his generalizations which distinguish the philosopher. Now it is the exertion of the classifying and generalizing powers which thus enables the intellect of man to cope in some degree with the infinite number and variety of natural phenomena and objects. (Jevons, Principles of Science.)

2. PAST CLASSIFICATIONS OF UNITED STATES PATENT OFFICE

As under the patent laws the people of the United States assume all the risks in granting a patent for any means of the "useful arts," a classification that will facilitate a judgment respecting the patentability of any means presented to the Patent Office is of peculiar moment. The enormous extent, diversity, and refinement of the useful arts preclude the formation of a judgment on novelty within a reasonable time, unless the necessary comparisons with known processes and instruments have been previously made along the lines that searches must follow and the results of such comparisons made available in the classification. The U. S. Patents constitute a large percentage of the available disclosures. The specialized problems of interference, infringement and right to use searches relating to the inventions *claimed* and thus protected by the patent or U. S. Patent application, require that the Patent Office Classification must be adjusted to the analysis, diagnosis and orderly arrangement of the claimed disclosures of U. S. Patents and applications to facilitate such searches. Unclaimed disclosures, and the disclosures of foreign patents and publications of all kinds, can be integrated with the classification formed on the above basis.

The first published classification of United States Patents, promulgated in 1830, comprised 6,170 patents, divided into 16 classes. The change from a registration to an examination system in 1836 instigated a new classification in 22 classes, including 9,800 patents. The next came in 1868 with 36 classes, including about 75,000 patents. On March 1, 1872, a revised classification was adopted, comprising 145 classes, including 131,000 patents. This classification is said to have been planned by Dr. Edward H. Knight. The placing of the patents in accordance with the schedule of classes is said to have been done by the several examiners. The class arrangement was purely alphabetical by class titles, and the number designations followed the alphabetical order. The names of things to be found in the several classes were arranged alphabetically under each class title. No attempt was made to bring the titles of allied materials into juxtaposition or to effect other definite arrangement with reference to subject matter in the printed schedules. A consolidated name index supplemented the list of names by classes.

This classification of 1872 is in part the classification that now exists, many of the same class numbers and titles being still in use, though the great majority of these classes have since been revised to provide new subclass schedules with definitions since 1898. Examiners were apparently permitted to make changes in classification to suit their convenience without notice until 1877. In that year a revision of the published schedule was made by a committee resulting in the addition of 13 new classes, and examiners were ordered to transfer patents in accordance with the new titles. The first classification published with distinct subclasses appeared in 1880. From that time until 1898 the classification grew by addition and subdivision of classes to suit the ends of individual examiners or in response to supposed exigencies of the work where one division was thought to be overloaded and another underloaded, and the alphabetical arrangement of subclasses under each class has succeeded the alphabetical list of names. The arbitrary correspondence originally established between the alphabetical order of class titles and the numerical order was destroyed as soon as expansion of the classification began.

However, suitable to the then-existing material of the useful arts the classification of 1872 may have been, it failed as fail all inductive processes wherein the generalizations are not broad and deep. (Isaac Newton's intellect could detect the resemblance between the falling fruit and the motions of the planets.) The classification of 1872 was not exhaustive; it failed to recognize to the fullest extent what Bishop Wilkins saw nearly 300 years ago, to wit, that there are "arts of arts;" and it failed to provide for future invention of new

species in the same art, and to recognize that new arts could be formed from combinations of the old.

3. BEGINNING OF REVISION

The Classification Division was created in the hope that guiding principles of classification could be developed and applied for the purpose of amending or revising the classification whereby patents could be placed with greater assurance, and whereby the searcher with these guiding principles in mind might find the nearest references. It was confronted with the problem of revising while at the same time keeping accurate record of all changes, correcting all indexes of patents, and using copies in constant demand for search at the same time, necessitating much clerical work, and constant interruption—of correcting rather than planning anew; of mending a machine while constantly increasing duty was required of it.

Ideas on the subject of revision were called for by the Commissioner of Patents, and all in the Patent Office had an opportunity to set forth their notions. The views of one met with approval and in accordance with those views a "Plan of Classification" was prepared by the Patent Office and published in 1900 by the Government Printing Office. What other plans may have been submitted is not generally known.

Revision of classification began in 1898 in accordance with that subsequently published plan. Experience gained during the following years caused the initial plan to be revised, the revision, "The Classification of Patents" being published by the Government Printing Office in 1915.

This pamphlet is a revision of the 1915 plan. It follows the text of the 1915 plan in all respects except the revised portions. Most of the titles used in the table of contents of the 1915 plan, arranged in substantially the same order have been used, though in some instances the revision necessitated addition of titles, or revision of titles to fit the revised text.

4. PRECEDENTS AND AUTHORITIES

No effective precedents have been found in any prior classifications of the arts. The classifications of the principal foreign patent offices have not been materially different in principle from the United States Patent Office classifications of the past.

The divisions found suitable for book classifications for library use, have not been deemed adequate to the exactness and refinement essential to a patent office classification of the useful arts. The systems of class and subclass sign or number designations of the modern library

classifications, with their mnemonic significance, afford the most important suggestions to be drawn from library classification. None of these systems of designation has been adopted, (1) because of a serious doubt as to the utility of such designations by reason of the length or unwieldiness to which they would attain in the refinements of division necessary in a patent office classification, and (2) because of the enormous amount of labor necessary to make the change from present practice.

The best analogies are in the known (but changing) classifications of the natural sciences, and in them the problems are so different that they can serve only to illustrate general principles. The broad principles of classification are well understood. The authorities are the logicians amongst whom may be mentioned the ancient Aristotle and the more modern Bentham, Mill, and Jevons. The effort of the Classification Division has been to adapt and apply these well-known principles to the enormously diversified useful arts.

5. DEFINITION OF SCIENTIFIC CLASSIFICATION

It may be well to insert here an authoritative definition: "A scientific classification is a series of divisions so arranged as best to facilitate the complete and separate study of the several groups which are the result of the divisions as well as of the entire subject under investigation." (Fowler, *Inductive Logic*.)

Investigation and study of any subject will be facilitated if the facts or materials pertinent to that subject be so marshaled and arranged that those most pertinent to it may appear to the mind in some form of juxtaposition. It is one primary purpose of the Patent Office classification to divide and arrange the body and multitudinous units of the useful arts so that, having the question of novelty of any defined means to answer, one may with reasonable assurance approach that portion of the rank of arts in which it will be found if it is not new, and in propinquity or stated relationship to which will also be found those means that bear the closest resemblances to that sought for, the resemblances of other units growing less in proportion to their distance therefrom.

The second primary purpose is to so form the classification as to reduce the danger that interfering applications or infringed patents will be overlooked.

6. PRINCIPLES OF THE NEW CLASSIFICATION OF THE PATENT OFFICE

The discussion herein will be based primarily on the classification of United States Patents. The principles set forth are applicable

to all disclosures of the useful arts, though the criterion of *prima facie* novelty, the patent claim, will be missing.

A classification will be useful in proportion (1) to the pertinence to the subject under investigation of the facts selected to be grouped together, or, in other words, in proportion to the appropriateness of the "basis of classification" to the subject in hand; (2) to the convenience, stability, and uniformity of the arrangement of the subdivisions whereby the investigator may proceed with reasonable assurance to that portion of the rank of groups within which he will find cognate material; (3) to the accuracy and perspicuity of the definitions of the several divisions and subdivisions; (4) to the completeness and reliability of the cross-referencing and cross-notations; (5) to the uniformity, feasibility, and certainty of the rules by which the accessions disclosing one or several inventions may be diagnosed and distributed to the appropriate divisions of the classification in accordance with the basis adopted.

7. ELEMENTS OF A PATENT OFFICE CLASSIFICATION

Corresponding to the foregoing analysis the theory of Patent Office classification may be treated in five parts: (1) The principles on which the arts shall be divided (basis of classification); (2) subdivision and mechanical arrangement of groups; (3) definition; (4) cross-referencing and search-notes; (5) the choice of features by which a patent shall be assigned in the classification (diagnosis).

8. BASIS OF CLASSIFICATION

The first and most vital factor in any system of classification is the basis of division, that is, the kind of characteristics common to any number of objects selected to characterize groups, whereby the individuals of any group will resemble each other for the purpose in view more closely than any individual in any group will resemble any individual in any other group.

There is no property of objects which may not be taken, if we please, as the foundation for a classification or mental grouping of those objects, and in our first attempts we are likely to select for that purpose properties which are simple, easily conceived, and perceptible in a first view without any previous process of thought—but these classifications are seldom much adapted to the ends of that classification which is the subject of our present remarks. (J. S. Mill, *System of Logic*.)

It is clear that a number of objects may be classified on several different bases. For example, a number of books could be divided into groups (1) according to the subject of their contents; (2) according to the language in which the books are written; (3) according to the size of page; (4) according to the binding material; or (5) according

to the color of the binding. Each of these may be useful classifications for some purpose. For the student of literature none is of value except the first; for the connoisseur in bindings, only the last three. A classification of animals including classes of land animals and water animals would hardly suit a student of zoology, as it would associate with the shad and perch such differently organized creatures as the porpoise, whale, and seal. Yet such a classification might prove very suitable for a student of fisheries.

9. ART AS A BASIS

An "art," in the sense of a single unitary invention, is a synonym of process, method, and operation. The term "art" is ambiguous in popular usage. In the phrase "useful arts" in the Constitution, it denotes the area of endeavor to which the patent laws apply. When the word "art" is used to specify some fragment of the useful arts, it commonly raises different notions in different minds. It may be correctly used to designate any division of the useful arts. It is as proper to speak of the art of grinding or the art of molding as of the art of metal-working or the art of brickmaking.

A "use" is an application of a means to substance to produce an effect which may or may not be the necessary effect of the means in its normal operation. A catalytic may be used to ignite gas or to convert oleins into stearines. An ice pick may be used to hold a chalk line or prick holes in leather, etc.

In seeking a basis for a patent office classification the purpose of the classification should be the guide. Allegations of ulterior or accidental uses (such as may be made merely because the inventor thought of applying his invention to those uses only, or in an effort to get the application examined in a certain division) and other superficial bases should be avoided.

That basis will best suit the purpose which effects such an arrangement as will exhibit in suitable groups the "*state of the prior art*," by which is here meant not necessarily all the instruments of a trade or industry, or all the articles sold by a shopkeeper, as a stationer, *but those means that achieve similar results by the application of similar natural laws to similar substances.*

By "natural law" in the useful arts is meant that uniformity of action which is manifested whenever any particular substance in any particular condition is brought into such relation with any particular manifestation of energy that the force exerted modifies or prevents modification of the form, nature, condition, or locus of the substance or modifies the manifestation of energy or both.

As all inventions are made with the ultimate object of satisfying some human desire, the utility of an invention appears to be a natural

basis of classification. It is apparent, however, that most inventions may contribute to numerous utilities besides the ultimate one. Many processes and instruments intervene between the seed planter and the wheaten rolls upon the breakfast table. The plow may be viewed as an agricultural instrument or as an instrument of civil engineering, according as it is used for preparing the field for planting or rounding a road. A radiating coil of pipe may be thought of as a condenser of steam or of alcoholic vapors, according as it is applied to one material or another; as a cooler or a heater, according to the temperature of a fluid circulated through it. A hammer may drive nails, forge iron, crack stone or nuts. Underlying all of these ulterior utilities, there is a fundamental one to which the normal mind will reach in its natural processes and there rest. The plow loosens or turns over the surface of earth; the coil effects an exchange of heat between its interior and exterior; the hammer strikes a blow. A classification of plows in agriculture, road building, or excavating, according to stated ulterior use; of a radiator coil as a steam condenser, still, jacket-water cooler, refrigerator, or house heater; of the hammer as a forging tool, a nail driver, or a nut cracker, appears to separate things that are essentially alike. But classifying a plow on its necessary function of plowing, a radiator on its necessary function of exchanging heat, a hammer on its necessary function of striking a blow, evidently results in getting very similar things together. Assuming for the moment that utility is a reasonable basis of division of the useful arts, it is deemed more logical to adopt as a basis some utility that *must* be effected by the means under consideration when put to its normal use rather than some utility that *may* be effected under *some* conditions.

Two of the five predicables of ancient logic are property and accident.

A "property" may be described as any quality common and essential to the whole of a class but not necessary to mark out that class from other classes. Thus, all wheel tires may be said to possess annularity; but washers and finger rings are also annular. A "peculiar property" is one that not only always belongs to a class of objects but belongs to that class alone; thus a circle has the peculiar property of containing the greatest space within a line of given length, and catalytic substances have the power of setting up chemical reaction without themselves being changed.

An "accident" is any quality that may indifferently belong or not belong to a class without affecting the other qualities of the class. That a man's name is James is an accident telling nothing of the man's physique or character.

The capacity of the hammer to strike a blow, the capacity of the radiator coil to exchange heat, are in the nature of peculiar properties.

The capacity of the hammer to crack nuts, of the coil to condense steam, are in the nature of accidents—something that follows from the impact and the heat exchange because of the particular accidental conditions of operation. To select an accident as a basis of classification is contrary to the laws of thought.

It may be said then that the Patent Office classification is based upon “art” in the sense that it collects together similar means (or processes) that achieve similar results by the application of similar natural laws to similar substances, i. e., “art” in the sense of the direct, proximate or necessary operation, function or effect, rather than remote or accidental use or application in industries or trades. A proper maintenance of the distinction between the word “art” as used above, the phrase “industrial arts” used in the sense of industries and trades, and the term “art” in the sense of process or operation, is essential to an effective classification for the purpose of a patent office search. Similar instruments have been patented in three different classes, because of the statements that one was designed for cooling water, another for heating water, another for sterilizing milk; in four different classes, because of the statements that one apparatus was to separate solids from the gases discharged from a metallurgical furnace, another to separate carbon from the combustion gases of steam-boiler furnace, another to remove dust and tar from combustible gas, and another to saturate water with carbon dioxide. Owing to the continuance of a classification based largely on remote or accidental use, many applications come into the office setting forth inventions of very general application which nevertheless have to be classified more or less arbitrarily in one of several arts in which they may be used but to which they are not limited.

10. FUNCTION OR EFFECT AS A BASIS

“Effect” or “result” is the consequence of a process of the useful arts practiced with or without instruments. The effect of an instrument is the effect of its operation. Effects may be direct or indirect, proximate or remote, necessary or accidental.

“Product” is an effect consequent upon a process that changes the form, state or ingredients of matter perceptibly and permanently, as distinguished from effects that are fleeting or involve no change in perceptible form, state, or ingredients of matter.

“Function” is the “action of means upon an object while producing the effect” (Robinson). Functions may be direct or indirect, proximate or remote, necessary or accidental. The direct, proximate, or necessary function of the hammer in normal operation is impacting. Indirect, remote, or accidental functions of a hammer may be comminuting, forging, driving, etc.

Means of the useful arts are related in different degrees. Resemblances selected as bonds for a number of inventions may be more or less close. It is axiomatic that close resemblances should be preferred over looser ones for classification purposes. Processes and instruments for performing general operations, such as moving, cutting, molding, heating, treating liquids with gases, assembling, etc., are more closely bonded than those for effecting the diverse separate successive operations directed toward complex special results, such as making shoes, buttons, nails, etc. Means of the former sort perform an essentially unitary act—the application of a single force, the taking advantage of a single property of matter. Those of the latter sort require the application of several different acts employing frequently a plurality of forces or taking advantage of several properties of matter. In the former case, classification can be based on what has been called function, in the latter it can not be based on function but can be based on what has been called effect (or product).

Function is closely related to cause. It is an axiom of logic that cause is preferable to effect as a basis of those classifications designed for scientific research. Hence the functional basis is preferred in all cases in which it can be applied. A condenser for the fumes of zinc is much more like a condenser for the fumes of acid or the vapor of water than it is like the art of recovering zinc from its ores, and it employs only one principle, to wit, heat interchange. A water-jacket for cooling the walls of a gas-producer or glass-furnace is much more like a water-jacket for cooling the walls of a limekiln or steam-boiler furnace than it is like the art of gas-making or manufacture of glass articles. In accordance with what are thought to be the correct principles, therefore, the zinc-condenser ought not to be classified as a part of the art of metallurgy, nor the water-jacket as a part of the art of gas-making, merely because these instruments have a use in these arts, but should be included, respectively, in classes based upon the more fundamental utilities effected by them.

Although it is evident that molding a button is more like molding a door-knob than it is like making buttons by the combined operations of sawing, grinding, turning, and drilling, wherefore the molding of buttons should be classified in a general plastic art rather than in a special button-making art, yet the making of buttons by a plurality of different kinds of operations can be placed only in a class based upon the product, to wit, button-making. Since, therefore, the combination of many different operations for the production of a specific article can not be classified on the basis of any single function, it must be classified on the basis of effect or product. Thus by selecting essential function as a basis when possible, and resulting effect when the functional basis is not possible, one may approximate

to the correct classification described by Herbert Spencer in "Classification of the Sciences," as follows: "A true classification includes in each class those objects that have more characteristics in common with one another than any of them have with objects excluded from the class."

So it is deemed better to classify in accordance with the function or effect it is known a means *must* perform or accomplish than in accordance with the *object* with respect to which an act or acts are directed or in accordance with some *effect* which may or may not result.

11. STRUCTURE AS A BASIS

The phrase "structural classification" is frequently made use of. The application of the phrase to processes is manifestly absurd. The Patent Office never had a structural classification except in a limited sense. How could a machine, for example, be classified on structure, leaving out of consideration its function and the effect of its normal operation? In the refinements of subdivision, however, it becomes frequently desirable to form minor subdivisions on structural differences. And it may also be that instruments will be presented for classification that are of such general utility as to baffle the efforts of the intellect to attain to the fundamental and necessary function, in which case a structure-defined class may best suit the needs of classification.

As between a classification based upon structure and one based upon utility, the choice has been for the latter, without prejudice, however, to instances that may arise in favor of the former.

The subject of structural classification will be dropped with a quotation from page 5 of the original pamphlet "Plan of Classification," etc.; "A purely 'structural' classification is almost impossible on account of the infinite variety of mechanical combinations, and to attempt it would probably result in utter confusion, for the classes could not be defined, and the classification would be a mere digest of mechanical elements having no community of function."

12. DIVISION AND ARRANGEMENT

Logical division is the process by which the species of which a genus is composed are distinguished and set apart. Physical division or partition is the process by which the parts of any object are distinguished and set part. Metaphysical division is the process by which the qualities of a thing are segregated and set apart in thought.

Having divided the aggregate of things to be classified into a large number of groups on a satisfactory basis, a most useful work will have been accomplished and the purpose of a classification to assemble

the things most nearly alike and separate them from other things will have been partially achieved. Unless these numerous groups are arranged in some definite understandable relation to each other, or are placed in definite known positions where they can be found, the mere formation of the groups, on however good a basis, is not complete classification. Furthermore, unless the position of each group with respect to those other groups that resemble it in whole or in part is made known, he who wishes to find other related matter must seek aimlessly with no assurance that his quest will end until the whole series shall have been investigated. Each classified group is metaphorically a pigeonhole to contain similar material. If the pigeonholes are properly labeled, one can ultimately locate those that contain the matter he is seeking if he knows the name that has been applied to it. If the pigeonholes are arranged in alphabetical order, for example, he may find all related material, *provided he knows the name of every related group of material*, even though very similar things may bear names as far apart as A and Z. But if all things were so placed that, adjacent and in certain fixed relation to each pigeonhole, other related matter could be found, the resemblances lessening in proportion to the separation, and if the entire area of pigeonholes were divided, and certain areas assigned to certain kinds of things defined in general terms, guessing the location of and desultory search for things that may have different names, but yet be very much alike, would be lessened and all cognate material be bunched. A second vital factor of a system of classification, therefore, is the arrangement of the groups.

13. INFINITUDE OF POSSIBLE COMBINATIONS

There are now over 2,400,000 United States patents alone, each presumptively covering a creation of the useful arts that is different from every other. Most of these patents also disclose a plurality of elements or acts. Each of these patented means is potentially an element of a more complex combination that may be patented. When one considers merely the number of forms of energy, the number of known substances and known mechanical elements, and attempts to figure possible combinations and permutations, it becomes apparent that the size of the numbers resulting is incomprehensible. Consider the possibilities of combination also of the enormously varied disclosures of patents. Calculations of the possible combinations and permutations of a small number of objects are familiar. Different combinations of the letters of the alphabet are sufficient to record the sum of human knowledge in many languages. With substantially two octaves of the diatonic scale the world's melodies have been sounded,

nor do any doubt that our successors will thrill to airs that we have never heard. "Thirty metals may be combined into 435 binary alloys, 4,060 ternary alloys, 27,405 quaternary alloys" (Jevons). This does not take into consideration differences in proportion that figure so largely in results in the arts of substance-making. The total number of possible alloys of the known metals is incomprehensible. A moment's thought respecting the numbers of the means of the useful arts will alleviate any fears that the possibilities of invention are near the limit and will give food for further thought to all concerned with this attempt to classify the useful arts to the point of refinement necessary to enable this office to pass judgment with reasonable speed and accuracy upon the large number of applications filed each year.

14. DIVISION AND ARRANGEMENT IN THE NATURAL SCIENCES

Some of the natural sciences are said to be in what is known as the classificatory stage of development. In some sciences the subject of classification has been predominant and these furnish excellent examples of scientific classifications.

The much-admired classifications of zoology, botany, and mineralogy are among the best available models of logical division, systematic and analytical arrangement. The most casual consideration of these classifications, however, renders apparent the relative simplicity of the task of classifying natural objects differentiated by natural laws as compared with the task of classifying the products of the creative and imaginative faculties as applied to the useful arts. The chimera and other animal monsters occur only as figments of the mind. Zoological classification does not have to classify combinations of birds, fishes, reptiles, and mammals, nor does it deal in the way of classification with the parts of animals, nor is the question of absolute numbers of instances a matter of moment to such a classification, all of the members of a species being alike for classification purposes.

15. PERMUTATIONS AND COMBINATIONS OF USEFUL ARTS CONTRASTED

Any instrument of the useful arts may be combined with some other or any part with some other part. Organizations may be parts of some other organizations, *or even mutually parts of each other, as, for example, a pump may be a part of a lubricator, or a lubricator may be a part of a pump.*

Some parts are peculiar to one instrument, some are common to many. Every member of a species differs from every other member. Added to this, the intellectual differences between the authors of applications for patent and other writings, the differences in their generalizing powers, the relatively broad and narrow views of two or

more persons presenting the same invention (variations not indulged in by nature) complicate the problem of classifying the useful arts.

16. DIFFICULTY OF ENTITLING A SUBCLASS CORRESPONDING TO EVERY COMBINATION

In any main class or group of the useful arts there are always a number of characteristics that it may be desirable to take note of in subdivision titles. A moment's thought shows the impossibility of taking care of any large number of combined characteristics so as to provide exactly for each combination, for the reason that the limitations of space and of the perceptive faculties forbid. For a simple illustration, the imaginary classification of books for use by a book seller may be recurred to. The dealer, it may be assumed, has books on (1) four different subjects, history, science, art, and fiction, (2) each printed in four languages, English, German, French, Spanish, (3) in four different sizes of page, folio, quarto, octavo, duodecimo, (4) bound in four materials, leather, rawhide, cloth, paper. Here are four main characteristics, each in four varieties. A customer is likely to ask for *Ivanhoe* in English, octavo, bound in leather. Now if the book seller had sought to arrange the books into one class according to subject matter, into another according to language, another according to size, another according to binding, he would have fallen into confusion, because his classes would be formed on different principles or bases and overlap. Some histories will be in French, some will have octavo pages, and some cloth bindings. But if he divides first on the basis of subject matter, then each subject matter into language, each language book into sizes, each size into material of binding, he can immediately place his hand on a class wherein the book will be if he has it; but this classification, based on four different characteristics and four varieties of each, has necessitated the formation of 256 classes or divisions, and if five characteristics were provided for, 1,024 divisions would be required.

Adapting the illustration of the books to a patent office classification: If it were possible to view these characteristics as patentable in combinations of all or in any combinations less than all, and also as separate characteristics, 16 divisions additional to the 256 for each independent characteristic would have to be provided, as well as other divisions for combinations of less than the whole, in order to make the classification absolutely indicative of every feature, and the number of divisions would be enormous. In such a classification, after the proper division had been located, the search would be nothing, the difficulty would be to find the appropriate class.

17. EXPEDIENTS TO REDUCE THE NUMBER OF SUBDIVISIONS

Fortunately most people carry on their mental processes in accordance with certain uniformities. Under this uniformity of thought no patentable relationship may be alleged between a quarto volume and the subject of history or between a leather binding and the German language; wherefore 4 classes of coordinate value, based on the 4 characteristics, each divided into 4 subclasses, 16 divisions in all, may serve the purpose of a Patent Office search. But if, as sometimes happens, a patentable relationship had been assumed and admitted between a leather binding and any of the languages, or any of the subjects, or between any two or more of those different characteristics, provision could be made for such combinations by the following expedients:

Arrange the characteristics, in the order of relative significance or importance for the purpose in view, in four groups, giving each group the characteristic title. Under each title arrange the varieties in a similar relation as follows:

Cl. X.—Books.

1. Subject-matter—
2. History.
3. Science.
4. Art.
5. Fiction.
6. Language—
7. English.
8. German.
9. French.
10. Spanish.
11. Size—
12. Folio.
13. Quarto.
14. Octavo.
15. Duodecimo.
16. Binding—
17. Leather.
18. Rawhide.
19. Cloth.
20. Paper.
21. Miscellaneous.

Subject-matter, assumed to be the most important characteristic, is placed first. Any exhibit of mere material for binding, mere size, mere language, or mere subject-matter, would fall into the correspondingly entitled group. If, however, a book on history in German or a history in red leather, etc., were to be classified, it would be placed in subclass "History" in the subject-matter group, and a French book in green cloth would be placed subclass "French" in the language group. That is, *combinations of any characteristic with any one or more other*

characteristics are placed in the group for that characteristic selected as the most significant and which is thus highest in the schedule. Again, by assigning a number to each generic title, each such title becomes thereby the miscellaneous group for varieties other than those indented under it, as well as for all varieties associating any characteristic with one or more of those standing lower down. Thus, a book of poems would belong in subclass "Subject-matter" and a 16mo volume bound with purple celluloid covers would belong in subclass "Size." So, by giving meaning to relative position, exhaustive arrangement is sought to be provided in a reasonable number of groups. To provide for characteristics not specifically set forth in the schedule, an additional miscellaneous group may be added at the bottom for the unclassified residue and a depository for future matter not specifically provided for.

If the number of instances of association of subject-matter and binding materials, language and size, etc., are numerous, additional groups for combined characteristics might be placed above the groups having the names of the characteristics with a miscellaneous "combined" indicating that the characteristic groups are for single characteristics only and do not include books having several different ones, as follows:

BOOKS

Subject-matter and language.
Subject-matter and binding material.
Combined.
Subject-matter.
Language.
Size.
Binding material.
Miscellaneous.

To illustrate further, selecting for the purpose a mass of objects presenting problems more nearly like those presented to the office in questions of patentability, let it be assumed that one is to classify the objects in a heap of metal scrap.

On looking over the material of the heap it is noticed that there are a large number of metal balls; some have holes through them, some are hollow, some are smooth on the outside, and some are hollow, smooth, and perforated, but they are all nevertheless balls, and accordingly all balls can be separated out and placed in a heap by themselves. Next, the presence of bars in the general mass is observed, some long, some short, some straight, some twisted, some of round stock, some of square stock, etc. These may be gathered together and placed in a separate pile at the left of the balls. It is further observed that there are many differently shaped annular bodies in the heap resembling generally the single links of a chain, some cir-

cular, some elliptical, some twisted, some made of round stock, some of square stock, etc. They are all nevertheless annular bodies; these may be placed in a separate pile at the left of the bars.

Now, in the remnant of the original heap, a sufficient number of similar single elements does not remain from which to make a smaller pile of elements. These single elements are separated out into a pile to form a subclass of miscellaneous single objects of various forms. Different combinations of links, balls, bars, etc., are, however observed in the remainder of the original heap. Some are combinations of links some combinations of a ball and link, some of a bar and link, some of a bar, link, and ball, etc. The different combinations of which there are a sufficient number to form separate piles may be separated out, leaving a pile of miscellaneous combined metal objects.

These several groups may now be arranged in the following order:

1. Bar, link, and ball.
2. Bar and link.
3. Bar and ball.
4. Link and ball.
5. Chains.
6. Combined (remnants of combined scrap).
7. Links.
8. Bars.
9. Balls.
10. Miscellaneous (remnants of single elements).

Knowing that objects of metal scrap not covered by specific titles will be found in the miscellaneous group, and that the more complex specifically named things precede in order of arrangement, the more simple things, the particular piles to resort to for the things wanted, may be definitely determined. The same processes may be applied to each of the piles. Thus, balls, in the above illustration, may be divided into—

Balls—

- Hollow perforated.
- Hollow grooved.
- Hollow.
- Perforated.
- Grooved.

Again the same processes may be applied to a mass of more diversified junk, of which the metal scrap may form one pile, rags another, old bricks another, old timber another, and, still another, timber having metal straps, bolts, nails, etc., connected with it.

18. SUPERIORITY AND INFERIORITY

In the arrangement of subclasses in a class, those groups that are related to each other as whole and parts are arranged so that the wholes shall stand before the parts, and so that subclasses defined by

effect or by special use shall stand before those defined by function or general use. For example, in the scrap illustration above, assuming the titles to be in a printed arrangement, "chains" precedes "links," which may be parts of chains, and if it had been desired to separate animal-drags, for instance, from the scrap, some animal-drags being particular adaptations of a bar, links, and ball, the group of animal-drags should precede "Bar, link, and ball." The words "superior" and "inferior" have been used to indicate this relationship. A class or subclass defined to receive a certain combination is superior to one defined to receive an element or a subcombination that is a part of that certain combination. A class or subclass defined to receive means for making a particular product, as an electric lamp, is superior to a class or subclass designed to perform a general function, as pumping air from a container. And whenever a question of assignment of a patent or application that contains matters of two or more groups bearing that relation is raised, the "superior" group is selected to receive it.

Further, in those instances in which groups are formed on different bases or different characteristics, not comparable with each other, and a patent is presented having matter falling in each group, that group which is highest in position is preferred in those instances where separate provision for means having both characteristics has not been made.

In cases of necessity, as where a combination is presented for which no class has been definitely provided, but classes exist into which the several parts would fall if separately claimed, the same practice that obtains in similar situations with respect to two or more *subclasses* of a class may be followed with respect to two or more *classes* and the patent placed in that class which, in accordance with above-stated principles, should be deemed the "superior."

19. DEFINITE POSITIONAL RELATIONSHIP OF SUBDIVISIONS

As between *coordinate* groups divided on the *same* basis, there is no question of superiority and inferiority. The terms "superior" and "inferior" are useful in questions of relationship between combinations and subcombinations or elements thereof, and between groups founded on effect or product and those founded on function. The mere difference in complexity of mutually exclusive coordinate groups involves no relationship of superiority or inferiority. A subclass to receive a screw-cutting lathe is superior to a subclass to receive a lathe-headstock, a locomotive class is superior to a class to receive steam-engines, for the reason that the lathe is a whole of which the headstock is a part, and the locomotive is an organization of which the engine is an element. But the headstock subclass is not superior

necessarily to the tailstock subclass simply because the headstock is commonly more complex than the tailstock. *Yet arbitrary preference for classification in the headstock subclass may be established by position where an application or a patent contains claims for both.*

Thus in a class that is founded on a well-chosen basis that brings together things bearing close resemblances to each other, all types that contain the elements essential to produce a complete practically operative means will be found in subclasses that have a position somewhere between the beginning and end of the list of subclasses of the class. Those that *add features of elaboration* of the essential types and those that are *highly specialized to some particular purpose* within the definition of the class will stand above the essential type subclasses, while those subclasses for parts and details will stand below those for the essential types.

20. MEANINGS OF "GENIUS" AND "SPECIES"

Any class of objects may be called a "genus" if it be regarded as made up of two or more different kinds of objects or of two or more species. "Motors" is a genus when the class "Motors" is considered as divided into electric motors and nonelectric motors, or electric motors, spring motors, weight motors, current motors, fluid pressure motors, etc.

A genus is more "extensive" than any of its species in that it includes more variants within its scope, but is less "intensive" in that it is identified by general characteristics, more specialized characteristics being required to identify the species.

A "species" is any class that is regarded as forming a part of the next larger class, "electric motors" being a species of "energy transformers." A species is more intensive in its special characteristics than the genus to which it belongs, but less extensive in the number of variants included.

Every species may be a genus to other species until no further subdivisions can be made. This last indivisible species is termed the *infima species*. Every genus may be a species to another genus until a point is reached where no further generalization may be made or the *summum genus* is attained. In the Patent Office classification of the useful arts, the *summum genus* is useful arts. The *summum genus* of the plastic arts would be plastics. The *infima species* in the useful arts evidently never can be attained. "Proximate species" and "proximate genus" indicate, respectively, those species that are divided from a genus without intermediate genera, and those genera from which the species are directly divided. Motors, and not energy transformers, is the proximate genus to the species, fluid motors, electric motors, etc., while fluid motors, electric motors, etc., and not steam engines, alternating current motors, etc., are proximate species of motors.

21. INDENTED SCHEDULES

In an indented schedule all subclasses in the first column to the left are species to the genus represented by the class title. All subclasses indented under another subclass are species to the genus represented by the subclass under which they are indented. A subclass having other subclasses indented under it, not only represents a subject-matter to be divided into species but also all other species not falling within the titles indented. Although these relative positions might imply that only proximate species are indented one place, yet mechanical difficulties render it impracticable to so arrange that all species shall be indented under their proximate genera.

Indention properly carried out has a tendency to prevent in the process of logical division the logical fault of proceeding from a high or broad genus to a low or narrow species. This latter fault may inadvertently separate things that belong together. If, for example, it were desired to divide balls in the stated illustration according to material, an immediate division of balls into aluminum, zinc, glass, ivory, rubber, would be less useful than to divide into mineral materials and nonmineral materials as follows:

- Balls—
 - Mineral—
 - Nonmetallic—
 - Glass.
 - Metallic—
 - Aluminum.
 - Zinc.
 - Nonmineral—
 - Vegetable—
 - Rubber.
 - Animal—
 - Ivory.

However, it is evident that indention carried to its full extent, useful as it is in keeping analogous things together, would make the printing of schedules complex and unwieldy. Nevertheless, in the generalizing process necessary in logical division and arrangement, the divisions of species should always be *mentally indented*, as it were, under their *proximate* genera. Thus, under a genus unnamed may be arranged several species in juxtaposition, without actually printing the name of the genus, so that the schedule above may read:

- Balls—
 - Glass.
 - Aluminum.
 - Zinc.
 - Rubber.
 - Ivory.

In an arrangement printed in idea-order, though relegating the genera mineral, nonmetallic, metallic, nonmineral, vegetable, animal, to the mind unaided by printed words, the different species of the same genus may be kept together except that species for which no title has been provided must go back to the subclass under which the named species are indented. Thus, the arrangement above necessitates placing in subdivision "Balls" all *copper* balls, whereas indention under proximate genus "metal" would have brought all metal balls together. In a finely divided classification, printing of titles for all genera is not practicable; hence great care ought to be directed toward grouping species according to the principles of arrangement herein outlined, noting that whatever a change of basis is made, a new genus is implied, and that subclasses for all other species of the same genus, under whatever name, must be brought into juxtaposition as if indented under the implied genus.

22. BIFURCATE DIVISION

Most discussions of classification make reference to the so-called bifurcate scheme of division as the only one by which exhaustive division can be surely achieved. This is commonly illustrated by the ancient tree of Porphyry. By this method any subject it is desired to subdivide is first divided by writing the name of one selected species at one branch and writing at the other branch the name of the same species prefixed by "Not." Thus the Agassiz classification of living beings divides them first into sensible and not sensible (plants). A botanical classification divides plants into flowering and not flowering. A zoological classification divides animals into vertebrate and not vertebrate. By continuing the process of division in the same manner, the division is obviously exhaustive of the subject, there being always a negative subdivision to receive any subsequently created or discovered species. Although bifurcate division has been ridiculed by some, it is agreed by highest authority that it is the only plan of division by which one can be sure to have a consistent place for everything, or by which one can be certain that the divisions are mutually exclusive. It can be demonstrated that a classification schedule in which the relation of genera and species is shown by indentions, if correctly formed on the principles now sought to be applied in the revision of the Patent Office classification, is susceptible of conversion into a tree of Porphyry, while unlike the latter it is compact and wieldy.

23. UTILITY OF ARRANGEMENT

The expedient of indicating kinds of relationship between several equally indented divisions by relative position has the following utility:

(1) A uniform rule is provided, applicable to all classes, for placing disclosures that bear the relation of whole to part in subdivisions before those that bear the relation of a part to that whole, and those that are defined by a particular effect, product, material, or use before those that are defined by a function or an operation applicable generally to various effects, products, materials, or uses; whereby that portion of the schedule in which any disclosure belonging to any particular class should be found may be approached whether or not the investigator knows the name of the object sought for or the title of the appropriate subdivision.

(2) The substantial impossibility of dividing many branches of the useful arts exhaustively into a reasonable number of mutually exclusive or nonoverlapping subclasses is compensated for; so that when the classifier or the searcher has disclosure to place or to find including two or more different kinds of characteristics, for each of which a subdivision is provided, but no subdivision for the plural characteristics, it will be known that the disclosure should be in the subclass for that characteristic which stands before the subclass for the other characteristic.

(3) It compensates for omission of some generic titles that if written in the indented schedule would lengthen specific titles to a cumbersome extent.

(4) It provides a rule for cross-referencing where there are several disclosures bearing to each other any of the relationships indicated above, cross-referencing being necessary in one direction only where the matter illustrated is coextensive with the matter claimed. This is particularly useful for U. S. Patents and applications which claim several inventions in promoting accuracy of interference and infringement searches.

(5) It definitely limits the field of search for any *unitary invention* in any class so arranged, as no patented invention having the limitations imposed by a unitary claim should be found in any subclass below the subclass properly defined to receive it or those indented under it. Parts of such inventions may be found below or following this subclass in the same class if these parts are within the class definition, or elsewhere in the useful arts if not within that definition. The unitary invention may be found in the subclass limited to it and certain subclasses arranged *above* or *before* it adapted to receive organizations of which it may be a part.

A complete system of arrangement should comprise (1) a display of the entire field of the useful arts in a manner to show the relation of the larger as well as of the smaller groups—carrying the appropriate relationship as far as possible from the highest genera to the lowest species, the arrangement being such as would bring materials

most nearly alike into closest propinquity regardless of the names they may be called by. (2) Supplementary to this classification arrangement by ideas there should be an alphabetical index, which should include both subclass titles, appropriately cross indexed, and additional titles of various technical and trade names of things classified under subclass titles.

24. DEFINITION

Definition is indispensable in any classification and is very difficult. Every class must be defined and all of the groups under it. After definitions have been made and printed, they are sometimes found inadequate and must be supplemented by the definitions of other classes. This is unavoidable while the complete material remains unexplored *as it constantly must in the constantly expanding field of the useful arts*. Definition in the strict logical sense is not to be expected, nor is it necessary. It is commonly sufficient if an explanation or comparison be made sufficient to direct the mind to the character of the contents of the group and indicate its limitations. Hitherto four of the five predicables of ancient logic have been mentioned, to wit, genus, species, property, and accident. In connection with definition, the fifth predicable, difference, is useful. To define a class, it is sufficient, generally, for the purposes of office classification, to state a *peculiar property* (not an accident) of the objects included in the class; and to define a species under the class it is sufficient to state the name of the class plus the difference—i. e., with the addition of the limitations that characterize the species, since a species contains all the qualities of the genus *and more*. These additional qualities form the “difference.” The electric motor has the qualities that are common to motors and is differentiated by reason of the fact that electric energy is thereby converted to mechanical motion. This procedure in definition is susceptible of application from the highest genus to the lowest species. It is advisable to define the means included within a title without any introductory words, treating the subclass for definition purposes as if it were a collection of concrete things, in the same manner as in a dictionary definition.

25. CROSS-REFERENCES AND SEARCH-NOTES

Classification of a patent is said to be “original” in the class and subclass which receives the most intensive claimed disclosure, and in which the patent is indexed in the official classification indexes. “Original classification” is referred to as opposed to “classification by cross-reference.”

A “cross-reference” is a copy of a patent placed in a subclass other than that in which the classification is made original, in order to make

available for search inventions disclosed therein and additional to that by which the patent has been diagnosed and classified.

A "digest cross-reference" is a cross-reference formed from abstracts or extracts from a patent consisting of illustration and text cut from a photolithograph of a patent and mounted.

A "search card" is a sheet of the size of a photolithograph of a patent placed with the photolithographs of patents forming a subclass in the examining division and public search room, and containing suggestions for further search, and a definition of the subclass.

"Search notes" are addenda to class and subclass definitions comparing other classes and subclasses with the one defined and giving directions for search when necessary to prosecute search beyond the defined class or subclass.

If patents were in all respects like material objects, cross-references and search notes would not be necessary. Nails, screws, locks, hinges, and boxes are distinct things susceptible of definite separation and classification. Even though nails, screws, locks, and hinges form part of the box, the box is still a box, not a nail, screw, hinge, or lock. For the needs of the Patent Office classification, however, although a patent for a box must be classified with boxes, yet if a peculiar nail, screw, lock, or hinge is claimed in the same patent with the box, or even if any one of these customary accessories of boxes is illustrated, it may be necessary to provide copies of the patent for the box in each of the several classes provided for nails, screws, locks, or hinges.

Inasmuch as every relatively complex thing is made up of relatively simple things, it is obvious that all disclosures cannot be cross-referenced. Any attempt to calculate the number of cross-references to be supplied if all disclosures of the subjects of invention were to be cross-referenced would show the number to be incalculable. It is necessary, therefore, to *leave to the judgment of the classifier* the propriety of *cross-referencing unclaimed disclosures*.

Should a patent contain a number of *claims defining a number of differently classifiable inventions*, complete cross-referencing from the class in which the classification is made original into the other appropriate classes or subclasses should be effected, *unless* cross-search notes or arrangement of subclasses with appropriate titles may be substituted to advantage.

Cross-references of U. S. Patents are made from combination class to element class for claimed inventions and from the element class to the combination class in which it may be used for disclosed but unclaimed combinations. Within a single class, classification is in the first appearing of a series of coordinate subclasses in which any claim is classifiable, with cross-references to those subsequent coordinate subclasses for other claimed inventions, cross-references being made to

coordinate subclasses preceding that in which the patent is placed as an original only for unclaimed disclosure (see sec. 27).

Search notes indicate "superior" classes or subclasses, parallel or otherwise related classes and subclasses, or those classes and subclasses in which analogous structures having different purposes but adapted to answer broad claims may be found.

By arbitrary rules of arrangement such as have been referred to in the sections dealing with division and arrangement, a search may ordinarily be definitely limited to a certain number of subclasses, even where cross-references are not made. In such arrangement any given patent, *if it claims but one invention*, may be searched in the subclass within which the definition places it or subclasses indented under it, and in certain subclasses above, whose titles will indicate that the claimed invention might be included as a part of the matter defined to belong therein, but the identical thing claimed would never have to be searched for in any subclass following and not indented thereunder, though such following subclasses may have such unclaimed disclosure.

26. DIAGNOSIS TO DETERMINE CLASSIFICATION

Each patent and each application discloses one or more means of the useful arts (using the term "means" to cover both processes and instruments in the sense in which it is used by Prof. Robinson), almost always more than one, since most new means are combinations of mechanical elements or acts. In some patents and applications the disclosure is coextensive with that which is claimed; in others there is matter disclosed but not claimed. The unclaimed disclosure may be as valuable as the claimed disclosure for purposes of anticipation, and the classification must provide for both. If the claimed disclosure belongs in one class and the unclaimed in others, the classifier must choose between two or more classes that one in which the patent or application shall be classified and those into which it shall be cross-referenced.

27. CLAIMED OR UNCLAIMED DISCLOSURES

The claims of a patent are the statutory indices of that which the applicant believes to be new, they define an invention that has been searched by the Patent Office and no anticipation discovered for it. Future actions must be based on inductions from past experience; none knows what the future lines of search will be; the only guides for future searches are the searches of past; the evidence of past searches is the claims of patents; they trace the course of invention. Furthermore, a presumption of novelty attaches to the claimed matter; no such presumption attaches to the unclaimed. The law requires every

patent for improvement to show so much of the old as is necessary to explain the uses of the improvement. In practice much more than that is disclosed. Questions as to the proper placing of patents and cross-references would be diminished by the strict enforcement of Rule 36 of the Rules of Practice requiring that the description and the drawings, as well as the claims, be confined to the specific improvement and such parts as necessarily cooperate with it. In any event both the claimed disclosure and that which is unclaimed must be taken care of, one by cross-reference, and the disclosure selected for cross-reference is that to which no presumption of novelty attaches.

This practice of placing patents by the claimed disclosure is sometimes misunderstood. Its chief application is in determining classification in case of disclosures involving a plurality of main classes. Furthermore, the mere letter of the rule is not to be applied in preference to its spirit. Difference in scope of claims does not cause different classification. Subcombinations claimed may be placed with the combinations, and in subordinate type subclasses patents must be placed sometimes by claimed and sometimes by not-claimed disclosures, (see rules 21-25, Sec. 35).

28. DIAGNOSIS OF PENDING APPLICATIONS

What has been said relates to patents. The bearing of the practice of adopting the claimed disclosure as the basis of assignment of applications for examination has also to be considered.

Two pending applications claiming the same means very commonly differ in the kind and extent of disclosure. One application may disclose several inventions. Which of the several disclosures shall be selected as the mark by which to place the application? For instance, the typical wire-nail machine has a wire-feeding mechanism, a shearing mechanism, an upsetting (forging) mechanism, side-serrating mechanism, and pointing mechanism; it may also have a counting mechanism, a packaging mechanism, an electric motor on its frame for furnishing power; and in addition, numerous power-transmitting and other machine parts, such as bearings, oil-cups, safety appliances, etc. The applicant may have made a complete new organization of nail-machine and may seek a patent for the total combination. He may have invented a new shearing mechanism and have chosen to show it thus elaborately in the place of use he had in mind, or he may have designed a new counter or a new oil-cup or a new power transmission, or even a new motor, and have given his invention this elaborate setting. The shears, the counter, the oil-cup, the power transmission, and the motor are separately classifiable in widely separated classes. How shall the application be diagnosed for determining its place in the office classification? When the specification and drawing disclose (as most of them do) several subjects

matter of invention, though claiming only one, which of those several subjects matter shall control the classification?

The most natural procedure, at first thought, would be to classify on the totality of the showing, in which case the application for the nail-machine, supposed above, would be assigned to nail-making. But imagine the invention claimed by an applicant to be the counter. Then the examiner in charge of nail-making would have to search the class of registers with which he is not familiar. Suppose applicant No. 2 files an application for the same counter which he illustrates and describes in connection with a bottle-filling machine, and that, classifying on the totality of the showing, this goes to the division that has the class of packaging liquids. Now both the examiners in charge of bottle-filling and nail-making, knowing that counters are classified in registers, search the class of registers and also the pending applications in registers. After these examiners have made their searches, suppose applicant No. 3 files an application for the same counter, which he says may be used for counting small articles produced by automatic machines. Perhaps he shows the counter attached to a piece of conventional mechanism representing any manufacturing machine, mentioning, say a cigarette or pill or cartridge-making machine. It has not occurred to either the examiner of nail-making or the examiner of bottle-filling that the other might have any such application; nor does it occur to the examiner in charge of registers to search nail-making or bottle-filling. As the specification of the counter application mentions cigarette, pill, and cartridge-making machines to which the counter may be attached, the examiner in charge of registers may search those classes. Suppose that the counter proves to be new, and each of the three examiners allows a patent. Here now are three patents for the same thing. Of course, after allowance, the counter and all other disclosed inventions that give any suggestion of novelty are cross-referenced; but primary purposes of a patent office classification (to aid in determining patentability and determining interferences) has failed in this instance.

In the imagined situation respecting pending applications, without doubt diagnosis and classification upon the invention claimed is necessary to effect the purpose of the office classification. Cross-referencing after issue cannot undo that which has been done.

If no application save that of the nail-machine be pending, no duplication of patents occurs, but the labor of search is increased by reason of the unfamiliarity of the examiner with the inventions he has to search. After the patent is allowed he may find the entire combination of the nail-machine with an equivalent counter disclosed in a patent for a nail-making machine, so that as a nail-making machine this new patent is of no value as a reference. Very probably all of the

other inventions illustrated (except the counter) are also old in their respective classes; but the examiner of nail-making cannot tell this without extensive searches in those classes, so he notes cross-references for them all.

29. DIFFICULTIES DUE TO VARYING IDEAS OF CLAIMS

Very troublesome questions are constantly arising as to whether an invention should be classified in a combination class or an element class. The point will be illustrated by example: A describes and illustrates an automobile having an internal-combustion motor and a friction-clutch in the motor transmission gear. He states that the clutch is in the usual relationship to the motor and gearing, but claims a new clutch for whatever it may be adapted. B discloses an internal-combustion motor said to be for automobiles with transmission-gearing and a friction-clutch and claims "in an internal-combustion motor a friction-clutch," etc., specifying the form of the clutch. C makes the same disclosure, but claims "an internal-combustion motor having a specified clutch," while D, with the same disclosure, claims "the combination with the internal-combustion engine of an automobile" of a specified friction-clutch. E claims and illustrates only the friction-clutch. Should these be classified together? If so, in what class? Should a bearing composed of a specified alloy of copper, tin, and antimony, be classed as a bearing or as an alloy? Should a house painted with a mixture of linseed oil, lead oxide, and barium sulphate go to buildings or coating compositions? A lamp-filament of titanium and zirconium with electric lamps or with alloys? A building-block of cement, lime, sand, and carborundum, with building blocks or plastic compositions? Whether these be diagnosed as combinations or as elements and compositions respectively, and classified accordingly, criticism will be aroused. *The point in view is that although principles of patentability must be considered in a classification designed as an instrument to aid in determining patentability, convenience and accuracy of search and avoidance of voluminous cross-referencing may necessitate some arbitrary rule of classification to meet various and changing theories applied to the drafting and allowance of claims.*

From the foregoing it will be evident that classification involves orderly logical processes of induction (supplemented by hypothesis), of definition and of deduction. After gathering a large number of facts generalizations are made from them and an hypothesis is found to be confirmed or modified by more extended research; the divisions are then defined; by correct diagnosis of other instances (as other patents) deductions may be drawn respecting the appropriate place for them in the classification.

30. RULES OF CLASSIFICATION

The rules of classification stated in the subsequent sections attempt to particularize, demonstrate and clarify the general principles stated in preceding sections. The rules are divided into groups, one group under each of Sections 31, 32, 33, 34, 35, which correspond to Sections 8, 12, 24, 25, 26, respectively. The rules are identified by section and rule number (as 31-1), the rule numbers of the 1915 plan being retained unchanged, though the rules themselves are in many instances modified.

31. BASIS OF CLASSIFICATION

This section corresponds to sections 8 through 11 of the principles.

31-1. "Art" as a Basis

The basis of subdivision and assemblage of the means of the "useful arts" in the Patent Office classification is "art" within the meaning of "art" in section 4886, Revised Statutes. The direct, proximate or necessary art, operation or effect, rather than some accidental and remote use or application, should be selected. In all cases qualities or characteristics that persist through all accidental uses and that can be identified as permanent are to be preferred.

31-2. Operative or Manipulative Arts

The operative, instrumental, or manipulative arts, including machines, tools, and manufacturing processes, should be classified according to whether a single operation of one kind applicable to various materials to be used for various purposes is carried out by the claimed means, or whether plural operations are performed, which, combined, produce a special effect or special product.

Example: An instrument performing a plurality of operations peculiar to shoe-manufacture would be classified on the basis of shoemaking, because that instrument would be incapable of other use, while an instrument peculiarly adapted to drive nails would be classified on the basis of nailing, whether for nailing shoe-heels or other objects, and a hammer would be classified on the basis of its function as an impact tool even though described as for driving nails, and even into shoe-heels.

31-3. Static Structures

Static structures (passive instruments) will, in general, be classified on the basis of structure, either of special or general application, the essential functions and effects of static structures being resistive or the maintaining of forces in equilibrium.

Example: A structure recognized as peculiar to barriers of the kind known as fences would be classified in the special class of Fences, but posts, joints,

beams, etc., recognized as having use in general building, even though described as used in fences, would be classified in a more general building class, such as Wooden Buildings, Metallic Building Structures, or Rod Joints or Couplings.

31-4. Composition of Matter and Formed Stock

Compositions of matter and manufactured or formed stock or materials will be classified in accordance with the inherent character of the substance or material where possible, otherwise according to special use.

Example: A pure chemical should be classified on the basis of its chemical structure and constituents, even though useful as a food, medicine, dyestuff, explosive, etc., and alloys on the basis of metallic composition, even though used for bearings, coins, tools, etc.; whereas a physical composition having no reason for existence except to function as a cleansing composition or a paint might have to be classified on the basis of its function as a detergent or a coating composition, respectively. Also a bimetallic layered foil, plate, or wire should be classified as metal stock even though designed for conversion to a dental filler, plowshare, or electric conductor, and a woven textile fabric as a fabric even though described as used for a filter or apron for a paper-making machine.

32. DIVISION AND ARRANGEMENT

This section corresponds to sections 12 through 23 of the principles.

32-5. Exhaustive Division; Miscellaneous Subclass

The divisions or subclasses of a class should be made exhaustive, i. e., they should be susceptible of receiving any future invention that may fall within the scope of the class. The rule as usually phrased is: "The constituent species must be equal, when added together, to the genus." Exhaustive division may be secured by maintaining always a residual or miscellaneous subclass. The miscellaneous subclass represents the remainder of the original undivided material undefined except as the class is defined and may be accurately treated as if it had the class title.

32-6. Combinations to Precede Subcombinations

Coordinate subclasses must each be exhaustive of the characteristic or characteristics selected to identify that portion of the subject matter of the class collected therein. That is the claimed inventions for which a subclass provides, must not overlap as to the combinations classified in each, though a subsequent subclass may receive disclosed combinations which in their entirety are provided for in a preceding subclass, where only the subcombination for which the subsequent subclass provides is claimed (see rule 8), the disclosed combination being cross-referenced to its appropriate subclass.

As between two coordinate subclasses providing for two different characteristics, a combination between the two is placed in the first

appearing subclass in all instances where such combination is not provided for in some preceding subclass or in some other class.

32-7. Diverse Modes of Combining Similar Parts

The principle or basis of classification must recognize the diverse modes of combining the same or similar parts to obtain characteristic combinations that are unrelated both structurally and functionally.

Example: A lubricator having a pump as a part thereof contrasted with a pump having a lubricator as a part thereof.

32-8. Important Characteristics to Precede Less Important

Characteristics deemed more important for purposes of search should be provided for in subclasses that precede subclasses based on characteristics deemed less important, see rule 6.

Caution: Keep in mind that no search can be deemed entirely unimportant. Also that characteristics viewed as of lesser importance may require precedence to avoid their entire loss from the schedule.

32-9. Relative Position of Subclasses

(a) Miscellaneous subclasses for a characteristic follow all subclasses having such characteristic as a part of a larger combination.

(b) The subdivisions of a characteristic should be either indented under the miscellaneous subclass for such characteristic or precede the same, and not form or be a part of subsequent coordinate subclass or group of subclasses. Distinguish, however, characteristic unrelated combinations formed by diversely combining the same or similar parts (rule 7).

(c) Combinations of the fundamental subject matter of a class with means having a function or utility unnecessary for or in addition to the function or utility of the fundamental subject matter should precede subclasses devoted to such fundamental subject matter.

(d) The subdivisions based upon effect or special use, should precede those based upon function or general use.

Example: A partial schedule of Class 241 follows to illustrate the arrangement of subclasses.

241. SOLID MATERIAL COMMINUTION OR DISINTEGRATION

Apparatus

- 31 With explosion preventing or relieving means.
- 32 With overload release means.
- 33 With automatic control.
- 38 Including means applying fluid to material.
- 39 Fluid comminutor type.
- 63 With simultaneous control of inter-related feed, drive and/or surface positioning means.

- 65 With temperature modification of material.
- 68 With separation or classification of material.
- 83 Comminuting surface provided with openings to permit discharge of material.
- 84 Cooperates with moving comminuting surface or member.
- 85 Rotary comminuting surface having openings cooperates with moving surface.
- 86 Cooperates with rotary striking member (e. g., hammer mills).
- 99 Bottle breakers.
- 101 Combined.
- 102 Comminuting surface deformable by contact with material.
- 103 Rolls frictionally driven and supported by relatively moving surfaces (e. g., ball chasers).
- 107 Plural rotary or oscillatory surfaces cooperate with common surface (e. g., chasing mills).
- 134 Parallel material flow through plural comminuting zones.
- 138 All comminuting zones of rotary striking member type.
- 139 All comminuting zones of cooperating surface type.
- 141 All comminuting zones of rotary surface type.
- 152 Series material flow only through plural comminuting zones.
- 154 All comminuting zones of rotary striking member type.
- 155 All comminuting zones of cooperating surface type.
- 157 All comminuting zones of rotary surface type.
- 170 Loose grinding body comminutor (e. g., ball or rod mills).
- 185 Rotary striking member (e. g., hammer mills).
- 198 Cooperating comminuting surfaces (e. g., jaw crushers).
- 220 Rotary surface or surfaces.
- 262 Reciprocating surface or surfaces.
- 274 Stationary comminuting surface or material bed.
- 277 Rotating comminuting surface.
- 285 Comminutor mounting means, frames or other normally stationary structure.
- 291 Comminuting elements.
- 301 Miscellaneous.

32-9a. Miscellaneous rotary striking member mills (e. g., hammer mills) are in subclass 185, but numerous subclasses involving combinations of which a rotary striking member mill is a part, precede (e. g., subclasses 86, 138, 154).

32-9b. Miscellaneous rotary surface mills are in subclass 220 and indented subclasses, but many special forms or organizations of mills having a rotary surface precede (e. g., subclasses 103, 107, 141, etc.). Note that plural rotary surface type mills may be diversely combined to form unrelated combinations (e. g., subclasses 141, 157).

32-9c. The fundamental subject matter of this class comprises means to comminute or disintegrate solid material. There are numerous single types (e. g., subclass 170), and many plural types (e. g., subclasses 134, 152). Safety devices and automatic controls therefor (subclasses 31, 32, 33) are unnecessary to the function or utility of the mills, though such controls greatly improve the same. The application of fluids to the solids (subclass 38) are sometimes

for purposes in addition to comminuting (e. g., for removing comminuted material, for heating or cooling the solids, etc.) and sometimes necessary to the comminuting function (subclass 39). The various apparatus subclasses 31 thru 101 illustrate subject matter of the types discussed in 9c.

32-9d. The special use as bottle breakers (subclass 99) precede the general type organized mills (e. g., starting with subclass 102).

32-10. Indentation of Subclasses

Class schedules are arranged with certain subclasses appropriately indented according to the following understood expedient. In a properly indented schedule subclasses in column at the extreme left are the main species (the proximate species) of the class. The titles and definitions of all subclasses proximate to the class (at extreme left) must be read with the title and definition of the class, as if indented under the class title one space to the right; so also with the titles and definitions of subclasses indented under other subclasses.

If a title has no number, it represents merely a subject matter to be divided, assumed to have no representatives other than those in the species indented under it, for example:

(Class) 248	Supports.
127	Stands.
	Receptacle.
128	Movable receptacle.
146	Stationary receptacle.

Such an arrangement should be avoided unless it is clear that the indented subclasses are exhaustive as in the above instance where the species are related as "movable" and "not movable."

If a title having indented species under it has a number, it not only represents a subject to be divided but also a subclass including all other species not falling within the indented titles. Indention does not indicate superiority or inferiority, but merely that the title and the definition of the indented subclass must be read with the title and definition of the subclass under which it is indented.

A title selected in a scheme of subdivision to be of first importance and placed, therefore, in advance, should not thereafter be indented under a title selected to be of secondary importance and, therefore, having a lower position. (See rule 8.) For example, the following would be in error:

Balls
Hollow
Perforated
Hollow

The correct arrangement would be either of the following :

Balls	Balls
Hollow perforated	Hollow
Hollow	Perforated
Perforated	Perforated

32-11. Different Kinds of Titles for Subclasses

A group of material may be divided on several different bases. "Use" or "purpose" or "object treated" may be adopted only when the "use" or "purpose" or "object treated" stamps upon the invention such peculiarities of operation or construction as to limit the applicability of the invention to the use or purpose named. (See Basis of Classification, Rule 1.) A group based upon mode of operation also may be divided into subclasses (1) with a "functional" title, usually participial in form, and adapted, therefore, to receive machines, processes, and tools; (2) with special use, purpose, or object-treated title containing the name of the use, purpose, or object; (3) with "type" title, usually a name or a name with a qualifying adjective; (4) with a title of a part or subcombination, also a name.

Example: In Class 90, Gear-Cutting, Milling and Planing, are to be found subclasses entitled "Gear-cutting," certain machines being peculiar to that use; also other subclasses with general functional title "Planing," subordinate to which are the special use subclass "Planing, soft metal," and the type subclass "Planers" divided into two coordinate subclasses, "Reciprocating bed" and "Reciprocating cutter," and several subordinate "part" subclasses, including "Tool-feeds" and "Tool-heads." The adjective form of the title "Planers, reciprocating bed," indicates a type subclass. If the title had been Planers, reciprocating beds, the indication would be that the subclass was a part subclass to receive planer beds only. In the class referred to for illustration, "Tool-feeds" and "Tool-heads" indicates subclasses for parts and not for types of planers having tool feeds.

32-12. Arrangement to Limit Search and Cross-references

In arrangement of the divisions of a class, such arrangement should be sought as will minimize the need of cross-references. Search for any particular matter cannot always be limited to one group without such extensive cross-referencing as would in some cases defeat the purpose of classification. Forming the subdivisions of a class according to the total similarities of the inventions, rather than according to some selected more or less important characteristic, and arranging them in the correct order of superiority and inferiority, with care to maintain throughout the schedule the relative positional values of the several selected bases of division, will ordinarily in a closely bonded class limit the search for any single invention to the subclass

particularly suited to receive it and some subclasses preceding that one, excluding from the necessity of search the subclasses succeeding.

Example: In Class 241, Solid Material Comminution or Disintegration, it would not be expected to find any chasing mills lower in the schedule than subclass 107, and indented subclasses, but chasing mills of special type (e. g., ball chasers, subclass 103) and in particular combination (e. g., with automatic control, subclass 33, or including means applying fluid to materials, subclass 38) might be found higher up in the schedule. No hammer mills should be found succeeding subclass 185 and indented subclasses, but may be found in preceding subclasses (e. g., subclass 134, for plural mill arranged for parallel material flow therethru).

33. DEFINITION (SEE SEC. 24)

33-13. Tentative Definition:

Having some knowledge of the nature of the materials about to be classified, a tentative definition of a class to be formed may be framed, which may be either written down or merely carried in mind, to serve as a tentative guide. This tentative definition must be considered as subject to change to any extent by the fuller knowledge obtained by careful consideration of the material. After a full knowledge of the materials to be classified has been acquired, it will be necessary to frame a careful definition of the class, and also of each subclass.

33-14. How to Define

A definition of any class should state the "qualities and circumstances possessed by all the objects that are intended to be included in the class and not possessed completely by any other objects." A proper definition should not ordinarily contain the name of the thing defined. "Definitions in a circle" are, of course, worthless. A definition should be exactly equivalent to the species defined and should not be expressed in obscure or ambiguous language, but should employ terms already defined or perfectly understood. It should not be in negative form where it can be affirmative. If the class of object has a peculiar property, the naming of that may serve as a definition. If no peculiar property can be detected, the definition should name more than one quality or property. Several different classes may have one or more properties alike, but as the number is increased the likelihood of there being others having the same properties is decreased. The briefest possible statement of such properties or qualities as are possessed by all the objects of a class and not completely possessed by any other objects, which will suffice to distinguish the class from other classes and determine its position in the general classification, will be most satisfactory. To define any species, the genus having been defined, the genus should be named and the difference added. Of course, no generic definition should contain any limitation not characteristic of

every species of the defined genus. In seeking qualities by which to describe a genus or species, no accident should be selected.

Example: Suppose there be marked out and defined as a genus all means whereby one form of energy is transformed into another form of energy and no more, and the genus be named energy-transformers. We may then name, as species, energy-transformers that are motors and energy-transformers that are not motors. Motors may be defined by merely naming the genus energy-transformers, and stating the difference, to wit, continuously transforming energy into cyclical mechanical motion. Then the definition will be: Energy-transformers that are adapted to continuously transform energy into cyclical mechanical motion. The non-motor division will retain the genus definition.

It would not be illuminating for a searcher having little familiarity with the textile arts to look under the title "Carding" and find that carding is defined as a means for carding fiber.

Even though the first steam-engine invented had been used to run a gristmill, the accident of its use as a part of a gristmill would hardly warrant the definition of a steam-engine as a means to grind corn. Nor would a hammer be properly defined as an instrument to drive nails or to crack nuts or to forge horseshoes, even though a patent should not mention any use other than one of these and should lay heavy emphasis on the special value of the hammer as a nut cracker, nail driver, etc.

35-15. Explanatory Notes Used to Supplement Definition

In many instances, explanatory notes stating modes of operation, fields of use, common names for the subject matter, etc., will usually be found helpful.

34. CROSS-REFERENCES AND SEARCH-NOTES (SEE SEC. 25)

34-16. Impossibility of Cross-Referencing All Disclosures

Inasmuch as nearly every patent discloses unclaimed matter that is classifiable separately from the claimed matter, it is clearly impossible to cross-reference every disclosure of every means in every patent. Many things must be taken as conventional, obvious, or well known, and the good judgment of the classifier is bound to be exercised in cross-referencing matter disclosed but not claimed to be the invention of the patentee.

34-17. Occasion and Direction of Cross-Referencing

A mere part or element should rarely be cross-referenced from an element class to a superior combination class. An element forming part of a combination in a superior class should, if claimed, be cross-referenced to the element class and also if not claimed if it seems to be not merely a conventional form, and patents having claims for more than one differently classifiable invention should always be cross-referenced unless such an arrangement of subclasses with search-notes is substituted as will guide the searcher to all places where the

material may be found. Claimed matter additional to that which controls the classification, if belonging in the same class, should be cross-referenced into a *succeeding* subclass. Cross-references of unclaimed disclosures may be in either direction.

34-18. Occasion and Scope of Search Notes

To supplement or take the place of cross-referencing, more or less elaborate search-notes are needed, giving directions and suggestions for further search, setting out the relationship between classes and subclasses, and drawing distinctions by example. Search-notes should indicate other classes or subclasses in which the subject-matter of the group to which the search-notes are appended is likely to form a part of a more intensive combination, also analogous or related matter that might serve as a reference for a broad claim. They need not, in general, indicate where parts or elements of the subject-matter which are common also to other classes can be found, because the index of classes contains the necessary information. For example, it is not necessary in every machine-class to indicate by search-notes where machine-elements and static parts may be found, nor in a class of wooden boxes to point out where the nails, screws, hinges, or locks that may form a part of the box are classified.

35. DIAGNOSIS TO DETERMINE CLASSIFICATION (SEE SECS. 26 THROUGH 29)

35-19. Patents Diagnosed by Claimed Disclosure

Inasmuch as nearly every patent contains disclosure that is claimed and also disclosure that is not claimed, it has been deemed advisable to establish the general rule that where the claimed and unclaimed disclosures are classified in different classes or subclasses the invention both disclosed and claimed shall determine the placing of a patent (or a pending application) rather than any selected invention that may be disclosed but not claimed. "Not claimed" covers means that may form an element only of a claimed combination as well as means not referred to in any claim. (See exceptions in Rules 21 to 25 inclusive.)

Example: A patent discloses and claims a dash-pot but illustrates it in such relation to a metal-planing machine as to utilize it for checking the movement of the bed at one end of its path, or in connection with an electric generator to aid in effecting the brush adjustment; the patent should be classified in the subclass of Dash-pots. If the classifier finds the disclosed organization of dash-pot and planer or dash-pot and generator more than a conventional illustration of an obvious use, he should note a cross-reference to planers or Electricity, Generation. A patent discloses an internal-combustion engine associated with a specific form of carbureter; the claims relate to the engine parts only; the class of Internal-Combustion Engines should receive the patent, and a cross-

reference should be placed in Carbureters. A patent discloses and specifically claims the combination of a rail-joint comprising abutting rails, fish-plates, and specific bolts; the patent goes to an appropriate class of rail-joints, and if the bolt is more than a mere obvious conventional bolt, a cross-reference should be noted for the appropriate subclass of Bolts.

35-20. Patents Diagnosed by Most Intensive Claim

The totality of the claimed invention should be selected when possible to determine the appropriate class in which to place a patent. The entire expression of the invention will usually be set forth in the most relatively intensive claim.

All terms have a meaning in extension and in intension. The meaning of a term in extension consists of the objects to which the term may be applied; its meaning in intension consists of the qualities necessarily possessed by objects bearing that name. The term "motors" in extension means all motors—electric, gas, water, spring, weight, etc. "Motors" in intension means instruments to convert some form or manifestation of energy into periodical or cyclical motion of a body. As the intension increases the extension decreases, and vice versa. There must be more motors than there are electric motors, and electric motors have more qualifications than are common to all motors. Comparison of arts and instruments with respect to their extension and intension for classification purposes should be made between comparable qualities. A claim for a steam-engine may be very specific while a claim for a reaper may be very broad; here there is no comparable relationship, and the terms intensive and extensive do not have the relative significance most useful in classification. But when a patent or application contains claims for mechanism peculiar to electric motors and other claims for mechanism common to electric motors and other kinds of motors, the claims for the electric motor would control the classification.

But mere difference in the scope of claims should not make a difference in classification.

35-21. Exception to Rule 19, Claim for a Part of a Disclosed Combination

Where a patent discloses but does not claim a combination of proper scope to be classified in a combination subclass and claims merely a detail classified in a subclass lower in the schedule, both in the same class, if the subclasses are so related that the combination always involves the detail so that a search for the detail must necessarily be made in the combination subclass, the patent may be placed in the combination subclass. This avoids the need of a cross reference into the combination subclass, and a lack of a copy in the detail subclass

is immaterial, as it is seen in the completion of the search through the combination subclass. (See Rule 19.)

Example: A patent for a saw-making machine discloses dressing, jointing, and gaging mechanisms; it claims dressing and jointing only. There is a subclass for dressing and jointing and gaging, and a subclass for dressing and jointing. In this case the patent may be placed in the first-mentioned subclass, as that must be searched always when the second-mentioned one is searched, cross referencing in this situation being of little value.

35-22. Exception to Rule 19, Claims for a Part of a Disclosed Combination

Where a subclass with a generic title which provides for both combinations and subcombinations and has indented thereunder a subclass providing for a particular combination, any patent which claims a subcombination falling within the generic subclass and discloses the combination of the indented subclass should be classified in the latter whether or not the entire disclosure is claimed. (See Rule 19.)

Example:

	Class 29.—Metal Working.
	Machine chucks and tool sockets—
	Cam closing—
126.	Scroll—
127.	Bevel pinion or ring.

If a patient claimed only the scroll or a scroll-chuck, but disclosed it in connection with a bevel pinion and ring, it should be classified in subclass 127, Bevel pinion and ring, and not in subclass 126, Scroll, although if there were no disclosure of the bevel pinion and ring it would go in subclass 126. Any search for scrolls must be prosecuted through all subclasses that include "Scroll" in the title.

35-23. Exception to Rule 19, Broad Combination (Old as a Matter of Common Knowledge) With Specific Element

In the case of patents that claim a specific element in combination broadly with some other thing, the combination being old as a matter of common knowledge, the claim neither setting forth particulars of relation therebetween nor particular characteristics of the thing combined with the specific element, classification is on the basis of the specific element. Such an invention adds nothing to the combination art, either in features of relationship or in characteristics of the several parts of the combination, and is of value only in its disclosure of the specific element. (See Rule 19.)

Example: A patent claiming a wheeled vehicle, broadly, in combination with an internal-combustion engine comprising a cylinder, a crankcase, a piston and suitably connected crank, a valve opening into the crankcase, and a valve in the piston opening into the cylinder, may be advantageously classified as an internal-combustion engine notwithstanding the alleged invention is for a motor vehicle.

35-24. Exception to Rule 19, Article of Manufacture Defined Only by Material

In order to meet the situation respecting the classification of those patents that indiscriminately claim an article of manufacture defined by the material of which it is made and those patents that claim those materials, leaving to the specification information regarding the designed uses, patents for articles defined only by their ingredients specifically set forth may be placed in the composition of matter or material class. (See Rule 19.)

Example: A patent having a claim for a cutter made of an alloy of iron, tungsten, and manganese would be classified with Alloys; a patent claiming a box made of paper composed of two layers united by a solution of asphaltum should go to the class of Laminated Fabric and Analogous Manufactures, rather than to paper boxes; and a patent for a house having its exterior coated with equal quantities by volume of carbonate of lead and oxid of barium suspended in a vehicle of linseed-oil would be classified as a paint rather than as a house.

35-25. Exception to Rule 19, Process of Utilizing a Composition.

An alleged process of utilizing a specifically defined composition or material which consists in merely applying it to the use it was designed for may be classified as a composition or material rather than as a process. (See Rule 19.)

Example: A process of painting the bottom of a marine vessel which consists in applying thereto a composition consisting of sulphate of copper, powdered metallic zinc, chlorid of antimony, and hyposulphite of soda, in a vehicle of linseed oil, would be more usefully classified as an antifouling paint than as a coating process, as the invention would hardly be distinguishable from a paint claimed as such and described for use on submarine surfaces.

35-26. Processes and Machines for Their Practice

In classes where it is determined that the processes invariably require a search of the machines for their practice, the processes and machines should be classified together in the same subclasses.

Where the processes to any large extent involve steps or operations distinct from the machines, the process should be classified in subclasses separate from the machines, or in separate classes, recognition being given of the distinct steps or operations.

Example: Thus, a method of rolling an iron plate, which consists in passing an iron blank between a pair of rolls arranged horizontally in juxtaposition one above the other and geared together so as to rotate in opposite directions, and causing an idle roll supported in bearings on the roll-housings to bear against the central portion of the surface of one of the first pair of rolls on the upper side thereof, could well be classified with the type of rolling-mill, while if to that method were added the steps of doubling the sheet after one passage between the rolls, again passing between the rolls, again doubling, and then passing the

now four-ply pack between the rolls sidewise or turned 90 degrees to the direction in which it had previously been fed, the classification should be with processes of sheet-metal manufacture.

35-27. Patents Having Claims to Several Different Inventions

In the absence of settled rules defining permissible joinder of inventions, there may be in one patent claims for one or more or all of the classes of invention named in the statute, to wit, machine, art, manufacture, and composition of matter. There may also be claims to several more or less related inventions in the same statutory class of invention, but each belonging to a different industrial art. (1) Where different main classes are involved, the patent will be classified by the most intensive invention, without regard to the statutory class to which it belongs. (2) Where different subclasses of the same class are involved, the patent will be classified in that one of the several subclasses defined to receive the several inventions which stands highest in the schedule of subclasses.

35-28. General Rule of Superiority Between Statutory Kinds of Invention

Where a patent contains claims for all or a plurality less than all of the statutory classes, the general rule of preference or superiority of the several classes is that represented by the following order, to wit:

(1) Manufacture.

(2) Process (art) of making; or process of procedure (in non-manufacturing processes).

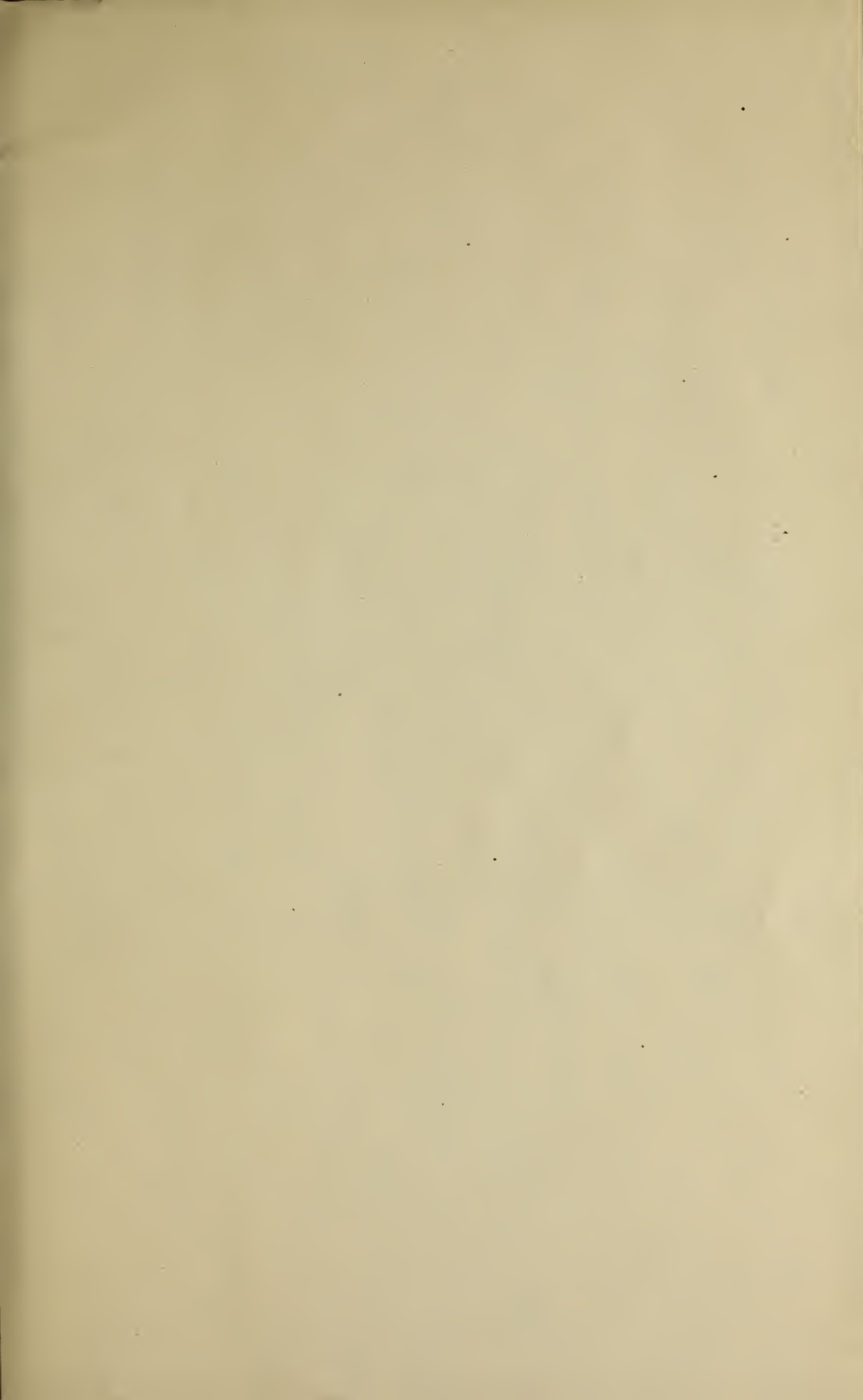
(3) Apparatus (machine) used in making; or apparatus (machine) used to practice the nonmanufacturing process.

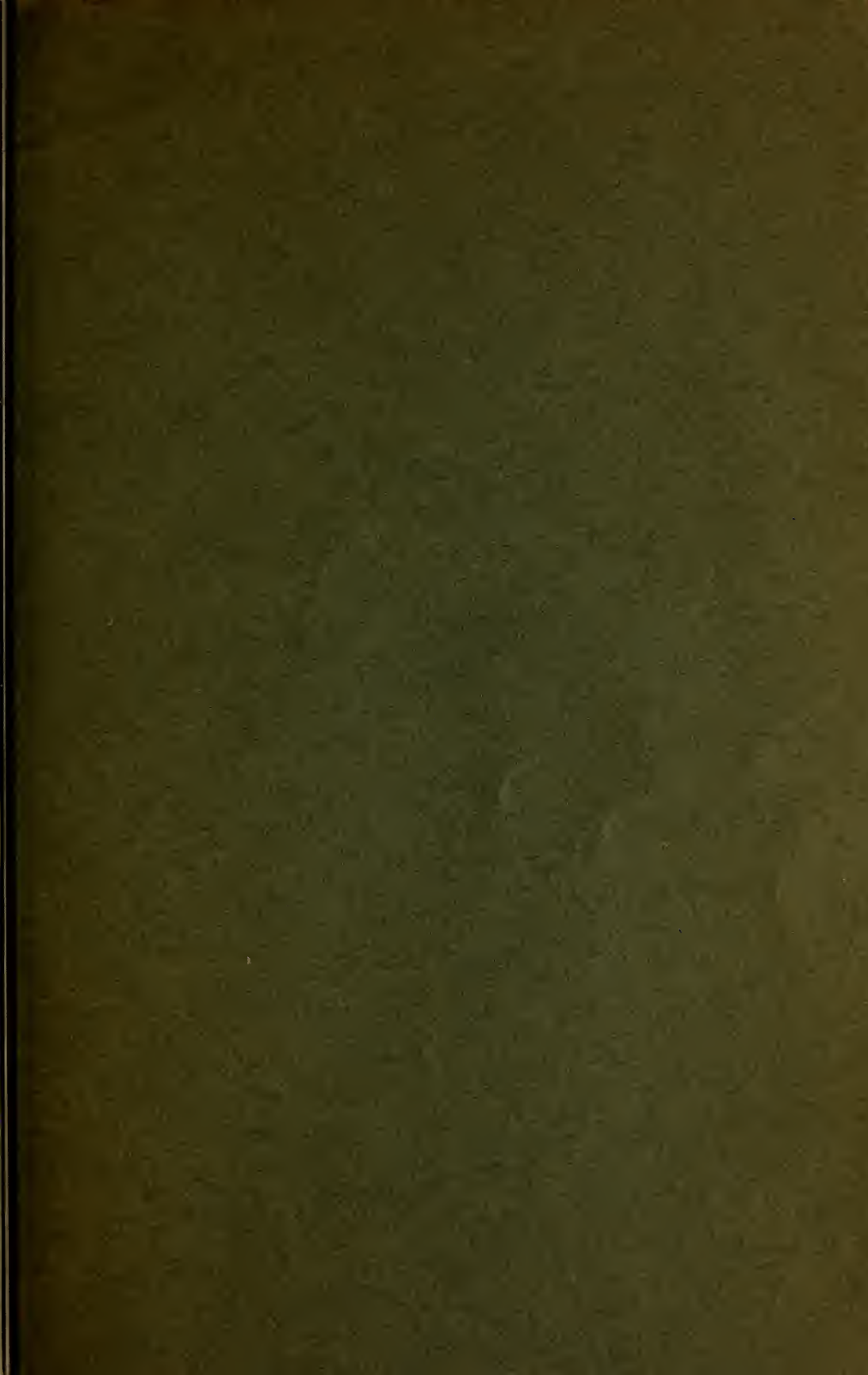
(4) Composition or other intermediate or blank used in making.

Any claimed manufacture that is used in or is operated on by a claimed process or that is used in or operated on by a claimed apparatus in the production of some further manufacture, would be in item 4 in its relation to such process or apparatus.

The above rule of preference applies only where the inventions are equally intensive. For treatment where a part only of the manufacture is claimed, the process covering the making of the entire manufacture, or where a complete organized machine is claimed, the process claimed being but a part of the process carried out by the organized machine, see Rule 27.







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